REMARKS

Claims 1-49 remain in this application. Claims 22, 23, 25-27, 29 have been amended. Claims 1-21 and 36-49 have been withdrawn.

Applicants' claims have been amended to better clarify Applicants' claimed invention. Independent claim 22, as amended herein, recites a device which includes an electrically insulating first coating encapsulating an elastomeric member, where that first coating has a dielectric constant of at least 500 volts per mil. Support can be found in the Specification at Page 8 / Lines 21-23.

Claim 23, as amended herein, recites a device wherein said electrically insulating first coating prevents release of silicon oils from the thermally conductive assembly. Support can be found in the Specification at Page 7 / Lines 19-21.

Claim 25, as amended herein, includes the elements of original claim 26. Claim 26, as amended herein, recites a first coating which comprises polyethylene and polyethylene terephthalate. Support can be found in the Specification at Page 10 / Lines 13-19.

No new matter has been entered. Reexamination and reconsideration of the application, as amended, is respectfully requested.

Claims 23 stands rejected under Section 112, second paragraph, as being indefinite because the Examiner found the phrase "components having differing heights" vague, indefinite, and confusing. Claim 23 is amended herein thereby curing this Section 112 rejection.

Claims 22 - 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either Yamaguchi (USPN 6,046,907) or Chomerics product literature, each taken in view of

LAW OFFICE OF
DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

Peterson (USPN 5,011,870).

Yamaguchi teaches a heat conductor comprising a heat conductive layer and a "potentially adhesive layer" which is disposed integrally with the heat conductive layer. Col. 1 / Line 61 - Co. 2 / Line 1. In operation, as the temperature of the heat conductor increases, the "potentially adhesive layer" softens and functions as an adhesive. Yamaguchi nowhere teaches or suggests a device which includes a thermally conductive member encapsulated by an electrically-insulating coating.

Peterson teaches "an improved organosiloxane composition comprising a polyorganosiloxane and a finely divided solid thermally conductive filler." Col. 2 / Lines 58 - 60. Peterson further teaches use of "finely divided metal powders and metal nitrides" as fillers. Col. 4 / Line 24. "Silicon metal, boron nitride, and aluminum nitride are particularly preferred." Col. 4 / Lines 28-29.

"The initial burden of establishing a basis for denying patentability to a claimed invention rests upon the examiner. *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984). In establishing a *prima facie* case of obviousness under 35 USC 103, it is incumbent upon the examiner to provide a reason <u>why</u> one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. *Ex parte Clapp*, 227 USPQ 972 (BPAI 1985). There are two (2) separate and distinct elements to this requirement. First, the combination of the reference teachings relied upon by the Examiner must teach, or at the very least suggest, ALL the claim limitations of the claim at issue. Second, there must be some motivation to make the combination of references relied upon by the Examiner.

LAW OFFICE OF
DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

As a preliminary matter, Peterson nowhere teaches formation of, or use of, an encapsulated device. Rather, Peterson teaches a coating formulation comprising a siloxane filled with a combination of fillers. This being the case, combined teachings of Yamaguchi and Peterson fail to teach or suggest a flexible, thermally conductive elastomer encapsulated with a coating.

Even if Peterson did suggest use of his coating as an encapsulant, Yamaguchi teaches away from encapsulating his heat conductor comprising a heat conductive layer and a potentially adhesive layer. Encapsulating Yamaguchi's heat conductor with Peterson's filled siloxane would render Yamaguchi's "potential adhesive layer" useless. Even if such an encapsulated device reached a temperature at which the potential adhesive layer softens, that adhesive layer would be encapsulated inside Peterson's coating, and could not therefore act as an adhesive.

It is further well-settled that "[t]here is no suggestion to combine, however, if a reference teaches away from its combination with another source." *Id.* at 1599; *Tec Air Inc. v. Denso Manufacturing Michigan Inc.*, 52 USPQ2d 1294, 1298 (Fed.Cir. 1999). Because Yamaguchi teaches away from its combination with Peterson, Applicants respectfully submit that the Examiner improperly combines the teachings of Yamaguchi and Peterson.

Even if the combination of Yamaguchi and Peterson were proper, that combination would not teach or suggest all the elements of Applicants' claim 22, as amended herein. Applicants' claim 22, as amended herein, recites an encapsulating coating have a dielectric strength of at least 500 volts per mil.

Peterson's composition comprises silicone grease. Col. 4 / Lines 63 - 64. As set forth

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DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

above, Peterson's silicone matrix is filled with metal particles and/or a mixture of metal nitrides. AREMCO PRODUCTS, INC. ("AREMCO") sells such a composition. Referring to Exhibit 1 hereto, AREMCO sells in commerce a silicone grease filled with aluminum nitride. *See*, HEAT-AWAY GREASE 638, at Page 2 of Exhibit 1. AREMCO's aluminum nitride filled silicone has a Dielectric Strength of 300 volts per mil. AREMCO PRODUCTS also sells in commerce an epoxy filled with aluminum nitride. *See*, Aremco-Bond 568. That aluminum nitride filled epoxy has a Dielectric Strength of 250 volts per mil.

The rheology of Peterson's filled silicone does not affect the Dielectric Strength. For example, Applicants direct the Examiner to the CHOMERICS product literature referenced in the Office Action dated May 11, 2004. More specifically, Applicants direct the Examiner's attention to "V-THERM thermally conductive elastomer interface pads." *See*, CHOMERICS product literature at page 38. CHOMERICS V-THERM product comprises a silicon pad filled with boron nitride, where that product does not include a carrier. CHOMERICS V-THERM boron nitride filled silicone has a Dielectric Strength of 150 volts per mil.

Applicants trust the Examiner will appreciate that adding a powdered metal to Peterson's silicone matrix filled with metal nitrides will not increase the Dielectric Strength of that material. Referring now to Exhibit 2 hereto, silicon metal comprises a semiconductor having an electrical resistivity of 0.01 ohm-cm. Therefore, a silicone matrix filled with a combination of silicon metal particles in combination with one or more metal nitrides will not have a Dielectric Strength of at least 500 volts per mil.

Regarding the rejection of Applicants' claim 22, as amended herein, over Yamaguchi in view of Peterson, Applicants respectfully submit that the combination of Yamaguchi and

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DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

Peterson is improper. Applicants further respectfully submit that even if the combination of Yamaguchi and Peterson were proper, that combination would not teach or suggest the elements of Applicants' claim 22, as amended herein. This being the case, Applicants respectfully submit that the rejection of claim 22, as amended herein, under 35 U.S.C. § 103(a) as unpatentable over Yamaguchi in view of Peterson has been successfully traversed.

Regarding the rejection of claim 22, as amended herein, over CHOMERICS in view of Peterson, Applicants respectfully submit that the combination of Peterson with CHOMERICS THERMFLOW Phase-Change Materials, THERMFLOW Low thermal Resistance Phase-Change Interface Pads, and THERMATTACH Adhesive Tapes, is improper in that encapsulating those CHOMERICS products with Peterson's coating would necessarily render the adhesive portion of the CHOMERICS products useless.

Encapsulating the remaining CHOMERICS products with Peterson's silicone coating filled with metal powders and one or more metal nitrides would not include all the elements of Applicants' claim 22, as amended herein. For the reasons set forth above, such an encapsulated material would not include an encapsulating coating have a Dielectric Strength of at least 500 volts per mil.

Therefore, Applicants respectfully submit that the teachings of CHOMERICS in view of Peterson does not teach or suggest all the elements of Applicants' claim 22, as amended herein. This being the case, Applicants respectfully submit that the rejection of claim 22, as amended herein, under 35 U.S.C. § 103(a) as unpatentable over CHOMERICS in view of Peterson has been successfully traversed.

Claims 23 - 35 depend, directly or indirectly, from claim 22. Under 35 U.S.C. § 112,

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DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

dependent claims are construed to contain all of the limitations of the independent claim from which they depend in addition to their own limitations. "If an independent claim is nonobvious under 35 USC 103, then any claim depending therefrom is nonobvious. MPEP 2143.03; *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988). Therefore, Applicants respectfully submit that the rejections of claims 23 - 35, as amended herein, under 35 U.S.C. § 103(a) have also been successfully traversed.

The separate patentability of claim 23 is worthy of note. Claim 23, as amended herein, recites a thermally conductive assembly comprising a flexible thermally conductive elastomeric member encapsulated with a first coating which prevents release of silicone oils from the thermally conductive assembly. As the Examiner acknowledges, the coating taught by Peterson comprises a siloxane. It is known in the art that siloxanes are extremely permeable to silicon oils. Exhibit 3 is an article entitled Diffusion Of Low Molecular Weight Siloxane From Bulk To Surface which studies the movement of low molecular weight ("LMW") components through a bulk siloxane polymer. "The smaller LMW components can move easily through the bulk polymer . . ." Ex. 3 at page 370.

In certain application, this diffusion of LMW siloxanes through a siloxane matrix is beneficial. "Even if a silicone surface loses hydrophobicity as a result of severe weather or continuous exposure to arching, it can recover hydrophobicity over time under dry conditions as a result of migration of LMW siloxanes from the bulk to the surface . . ." *Id.* While diffusion of LMW siloxanes through, and release from, a siloxane encapsulant may be beneficial in certain uses, Applicants' invention is directed to preventing such releases of LMW siloxanes from Applicants' thermally conductive assembly.

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DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

Exhibit 4 hereto also documents the permeability of LMW siloxanes in silicone encapsulants. Page 2 of Exhibit 4 recites two recites two origins of such LMW siloxanes. The LMW siloxanes may be present in the silicone encapsulant as formulated. Peterson teaches use of a siloxane paste. Applicant trusts the Examiner will appreciate that such a rheology results the presence of LMW siloxane components in the paste.

Exposure to high temperature causes breakdown of siloxane links in the encapsulant matrix resulting in the formation of the troublesome LMW siloxanes. Exposing Peterson's silicone encapsulant to elevated temperatures during use of the encapsulated device to conduct heat from a heat-generating electrical component will similarly lead to formation of the undesired LMW siloxanes as described in Exhibit 4.

In addition, both Yamaguchi and CHOMERICS teach use of thermally conductive silicone materials. LMW siloxanes disposed in those silicone materials comprises a separate source of silicone oils. Moreover, as the silicone heat transfer materials taught by Yamaguchi and CHOMERICS are subjected to elevated temperatures, those silicone materials produce LMW siloxanes. See, Exhibit 4. Thus, encapsulating the silicone materials taught by Yamaguchi and CHOMERICS with the silicone coating taught by Peterson provides multiple sources of LMW siloxanes.

The silicone coating taught by Peterson, however, is inherently unable to prevent migration of those silicone oils therethrough, and the release of those silicone oils therefrom. This being the case, combining the teachings of Yamaguchi and/or CHOMERICS with the teachings of Peterson, i.e. encapsulating the heat conductor of either Yamaguchi or CHOMERICS with Peterson's silicone encapsulant, does not teach or suggest all the elements

LAW OFFICE OF
DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114

of Applicants' claim 23, as amended herein. Quite to the contrary. Peterson teaches away from Applicants' claim 23, as amended herein.

Having dealt with all of the outstanding objections and/or rejections of the claims, Applicants submit that the application as amended is in condition for allowance, and an allowance at an early date is respectfully solicited. In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 502262.

Respectfully submitted,

Dale F. Regelman
Attorney for Applicants
Reg. No. 45,625

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on November 12, 2004, at Tucson, Arizona.

By

LAW OFFICE OF
DALE F. REGELMAN, P.C.
4231 S. Fremont Street
Tucson, Arizona 85714

TEL 520-741-7636
FAX 520-746-9114